IN THE DRAWINGS:

Replacement sheets respectively for Fig. 1, and Figs. 3A, 3B and 3C, and Figs. 4A and 4B are submitted herewith, wherein the legends have been professionally lettered.

REMARKS

In the Office Action dated November 17, 2006, the Examiner objected to the drawings as being informal due to the inclusion of handwritten legends in certain of the drawings. Replacement sheets for Fig. 1, and Figs. 3A, 3B and 3C, and Figs. 4A and 4B are submitted herewith, wherein the legends have been professionally lettered. No other changes in those figures have been made. Since Figs. 2A, 2B, 2C and 2D do not include legends, it was not necessary to submit replacement sheets for those figures.

A typographical error in claim 9 was noted, which has been corrected.

Claims 1, 4-6, 9, 11 and 12 were rejected under 35 U.S.C. §102(b) as being anticipated by Dumoulin et al. This rejection is respectfully traversed for the following reasons.

As explained in the Abstract of the Dumoulin et al. reference, the method and system disclosed in that reference are for the purpose of simultaneously obtaining a three-dimensional magnetic resonance angiographic image of moving spins that are associated with fluid flow in a region of a living organism, and a three-dimensional magnetic resonance image of stationary tissue in the same region. This is accomplished using a pulse sequence that causes the magnetic resonance response echo signal from the spin of a moving nucleus to be different from the magnetic resonance response echo signal from the spin of a stationary nucleus. Respective datasets are obtained for each type of nucleus (i.e., stationary and moving). Three different possibilities are then disclosed in the Dumoulin et al. reference for operating on these two datasets, namely to obtain a difference dataset from which the data from the stationary nuclei has been substantially removed, or to

obtain a summation dataset from which the data from the moving nuclei has been substantially removed, or to obtain a set of phase data that indicates the direction of flow or the flow amplitudes in the aforementioned difference dataset. As also stated in the Abstract of Dumoulin et al., regardless of which of these three options is utilized, the result is to generate *both* an angiographic image in a selected plane in a three-dimensional volume, *and* an image of the stationary tissue in the same plane.

In the Dumoulin et al. method and apparatus, therefore, *both* sets of data, i.e., the dataset obtained from the stationary nuclei and the dataset obtained from moving nuclei, are necessary to obtain the aforementioned result. The Dumoulin et al. method and system, therefore, undertake a single data acquisition of only one anatomical image, namely the dataset representing the stationary nuclei which, in turn, represents a stationary tissue image, and this single anatomical image is combined with an image representing the spin distribution of moving nuclei. The system and apparatus disclosed in the Dumoulin et al. reference have two significant disadvantages. A first of these disadvantages is due to the fact that when a moving spin distribution exists due to a cardiac cycle or respiration, the surrounding tissue is no longer stationary. For example, a beating heart causes the entirety of the surrounding tissue to move, so that tissue is not stationary, and the moving spin image and the anatomical image therefore cannot be accurately matched to achieve a resulting image of good quality.

A second disadvantage of the system and apparatus disclosed in the Dumoulin et al. reference is that the image of the moving spin distribution of the type shown in Figure 3 of the Dumoulin et al. reference appears to be only a snapshot,

without any dynamic character, and clearly does not represent a dynamic resolution of the moving spin distribution.

These disadvantages are avoided in the method, apparatus and computer-readable medium disclosed and claimed in the present application, which all proceed in a different manner from the method and system disclosed in the Dumoulin et al. reference. In the method, apparatus and computer-readable medium disclosed and claimed in the present application, *two* dynamic series of images are obtained and are linked together. An anatomical image *series* is obtained during a movement cycle in an examination subject, and a dynamically changing moving (flowing) spin image series is also obtained substantially simultaneously therewith. Both images are combined in a time-accurate manner, as set forth in the independent claims of the present application.

Therefore, since the Dumoulin et al. reference discloses only to superimpose a stationary image and a flow image, to obtain a composite image, this is not comparable to substantially simultaneously acquiring and displaying both an anatomical image *series* and a speed-resolved image *series*, to produce and display the speed-resolved image series integrated into the anatomical image series with the respective image acquisition times of those two series corresponding to each other.

In the claims as originally filed, because of the location of the phrase "during the movement cycle" in the language of those claims, the Examiner may have interpreted those claims as requiring only the speed-resolved image series to be acquired during the movement cycle. Each of the independent claims has therefore been amended to make clear that both the anatomical image series and the speed-resolved image series are obtained during the movement cycle. Moreover,

independent claim 12 has been editorially amended to conform to the recent guidelines for claiming computer programs, and claim 12 is therefore also submitted to conform to the requirements for statutory subject matter under 35 U.S.C. §101.

For the above reasons, therefore, Applicants submit that the Dumoulin et al. reference does not disclose all of the elements of claims 1, 4-6, 9, 11 or 12 as arranged and operating in those claims, and thus does not anticipate any of those claims.

Claims 2 and 3 were rejected under 35 U.S.C. §103(a) as being unpatentable over Dumoulin et al. in view of the prior art discussed in the present specification. For the above reasons, even if the Dumoulin et al. system or apparatus were modified in accordance with the prior art discussed in the present application, the subject matter of claims 2 and 3 still would not result, since those claims embody the subject matter of claim 1 therein.

All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

Submitted by,

Steven H. Noll (Reg. 28,982)

SCHIFF, HARDIN LLP
CUSTOMER NO. 26574
Patent Department
6600 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606
Telephone: 312/258-5790
Attorneys for Applicants.

CH1\ 4863448.1